

CLAIMS

What is claimed is:

1. A method comprising:
receiving a form from a user; and
allowing said user to configure a set of actions to be performed in processing a submission of said form, comprising:
parsing said form to extract specification of form elements contained in said form;
presenting said user with a user interface to allow said user to input specification for said set of actions to be performed in processing said submission of said form;
obtaining specification for said set of actions from said user; and
generating a configuration structure corresponding to said specification for said set of actions to be performed.
2. The method of claim 1 further comprising:
generating a program whose functionality corresponds to said set of actions specified by said user, said program to process submissions of said form.
3. The method of claim 1 wherein said user interface is generated based upon specification of said form obtained from parsing said form.

- 009260-4659960
4. The method of claim 3 wherein said user interface comprises one or more Java applets.
 5. The method of claim 3 wherein said user interface comprises one or more HTML pages.
 6. The method of claim 1 further comprising:
maintaining consistency between said configuration structure and said form.
 7. The method of claim 6 wherein maintaining comprises:
allowing said user to keep track of changes to said form after said set of actions was configured; and
allowing said user to reconfigure said set of actions based upon corresponding changes that have been made to said form.
 8. The method of claim 6 wherein maintaining comprises:
determining whether said form has changed from the time said set of actions was configured, comprising:
storing an original timestamp associated with said form when said set of actions was configured; and
periodically checking a current timestamp associated with said form and
comparing the current timestamp with the original time stamp to

determine whether said form has changed from the time said set of actions was configured; and

if said form has changed, indicating that said form and said configuration structure are out of sync.

9. The method of claim 8 further comprising:
notifying said user that said form and said configuration structure are out of sync;
and
allowing said user to reconfigure said set of actions for the changed form.

10. The method of claim 6 wherein maintaining comprises:
determining whether said form has been changed with respect to said form elements contained in said form;
indicating that said form and said configuration are out of sync if said form has been changed with respect to said form elements.

11. The method of claim 10 wherein determining comprises:
determining whether a new form element has been added to said form.

12. The method of claim 10 wherein determining comprises:
determining whether an existing form element has been removed from said form.

13. The method of claim 10 wherein determining comprises:

determining whether one or more attributes with respect to an existing form element has been changed.

14. The method of claim 10 further comprising:

determining whether changes to said form result in an incompatible change in the corresponding form processing program; and

if the changes to said form result in an incompatible change in the corresponding form processing program, notifying said user that said form and the corresponding processing program are no longer compatible and allowing said user to redo the configuration for the changed form.

15. The method of claim 14 further comprising:

if the changes to said form do not result in an incompatible change in the corresponding form processing program, continuing to perform those actions that are not affected by the changes in processing submissions of the changed form.

16. The method of claim 6 wherein maintaining comprises:

receiving a submission of said form from a user;

extracting current instance of said form elements and their submitted values from said submission of said form;

comparing said current instance of said form elements with previous instance of said form elements stored in said configuration structure; and

009260-1656960

if said current instance of said form elements is different with respect to said previous instance of said form elements, indicating that said form and said configuration structure are no longer consistent.

17. The method of claim 16 further comprising:

determining whether changes to said form result in an incompatible change in the corresponding form processing program; and

if the changes to said form result in an incompatible change in the corresponding form processing program, notifying said user that said form and the corresponding processing program are no longer compatible and allowing said user to redo the configuration for the changed form.

18. The method of claim 17 further comprising:

if the changes to said form do not result in an incompatible change in the corresponding form processing program, continuing to perform those actions that are not affected by the changes in processing submissions of the changed form.

19. A method comprising:

receiving a first form created by a first author, the first form including one or more input fields, each input field having one or more field attributes;

parsing the first form to extract specification information with respect to the one or more input fields including the one or more field attributes associated with each input field; and

presenting to the first author a user interface including a set of questions that are constructed based upon the extracted specification information with respect to the one or more input fields, the user interface allowing the first author to specify one or more specific actions that are to be performed in processing submissions of the first form.

20. The method of claim 19 further comprising:

performing the one or more specific actions specified by the first author in processing submissions of the first form.

21. The method of claim 19 further comprising:

generating a first program including one or more program components to perform the one or more actions specified by the first author in processing a submission of the first form submitted by a first user, the first program being designated as the program to process submissions of the first form.

22. The method of claim 19 further comprising:

generating a set of directives corresponding to the one or more actions specified by the first author, the set of directives is to be used by a first program that is designated as the program to process a plurality of forms including the first form.

23. The method of claim 22 wherein the first program is configured to process multiple forms based upon multiple sets of directives, each set of directives corresponding to each form.

24. The method of claim 19 wherein a configuration data structure is created for the first form to include configuration information provided by the first author with respect to the set of functions to be performed in response to a submission of the first form.

25. The method of claim 19 further comprising:
maintaining consistency between the configuration data structure and the specification of the first form.

26. The method of claim 25 wherein maintaining comprises:
modifying the configuration information in the configuration data structure in response to changes in the specification of the first form.

27. The method of claim 25 wherein maintaining consistency comprises:
determining whether the first form has been changed since the configuration data structure was created; and

if the first form has been changed since the configuration data structure was created, updating the configuration data structure to reflect the changes that have been made to the first form.

28. A program comprising:

first programming logic to parse a first form provided by a first author to extract information with respect to a set of input fields included in the first form, the information including attributes of the input fields; and

second programming logic to present to the first author a first user interface including a list of questions generated, the first user interface allowing the first author to provide configuration information with respect to a set of actions to be performed in response to a submission of the first form.

29. The program of claim 28 wherein the list of questions is generated based upon the extracted information.

30. The program of claim 28 wherein the configuration information for the set of actions to be performed is stored in a configuration data structure.

31. The program of claim 28 further comprising:

third programming logic to generate a set of actions based upon the configuration information provided by the first author, the actions are to be performed in connection with the processing of a submission of the first form from a user.

32. The program of claim 31 wherein the set of actions is to be included in a program that is designated to process submissions of the first form when the submissions of the first form are submitted for processing.

33. The program of claim 31 wherein the set of actions are designated as a set of directives to be used by a program for processing submissions of the first form, the program being designated to process submissions of multiple forms based upon multiple sets of directives each corresponding to each form.

34. The program of claim 31 further comprising:
fourth programming logic to maintain consistency between the configuration information provided by the first author and the first form.

35. The program of claim 34 wherein fourth programming logic comprises:
logic to detect changes to the first form after the configuration information is provided by the first author; and
logic to update the configuration information to reflect changes made to the first form.

36. A system comprising:
a first module to parse a first form created by a first author to extract specification information with respect to a set of form elements contained in the first form; and
a second module to obtain from the first author configuration information for a set of actions to be performed in processing a submission of the first form and to configure a first program using the configuration information obtained from the first author, the first program being designated as a processing program for the first form.

37. The system of claim 36 wherein the second module presents to the first author a list of questions constructed based upon the specification information extracted from the first form.

38. The system of claim 37 wherein the questions are used to obtain the configuration information from the first author with respect to the set of actions to be performed in processing a submission of the first form.

39. The system of claim 36 wherein, after obtaining the configuration information from the first author, the second module generates a set of functions to be included in the first program in processing submissions of the first form.

40. The system of claim 36 wherein, after obtaining the configuration information from the first author, the second module generates a set of processing directives to be used by a second program for processing submissions of the first form, the second program being designated as a processing program for multiple forms including the first form.

41. The system of claim 36 further comprising:
logic to maintain consistency between the specification of the first form and the functionality of the first program.

42. The system of claim 41 wherein logic to maintain consistency comprises:

logic to detect subsequent changes made to the first form; and
logic to update the first program's functionality to reflect the subsequent changes made to the first form.

43. A method comprising:

allowing a first author of a first form who is located at a first location to remotely configure a first program's functions at a second location, the first program to perform its corresponding functions in processing submissions of the first form, said allowing comprising:

receiving the first form at a first server;
parsing the first form to extract specification information of form elements included in the first form;
creating a representation of the form elements based upon specification information extracted from the first form;
obtaining configuration information from the first author; and
configuring the first program's functions using the configuration information provided by the first author.

44. The method of claim 43 wherein the representation of the form elements is used to obtain configuration information from the first author.

45. The method of claim 43 wherein the functions to be performed by the first program comprise a field validation function that includes validating one or more form elements included in the first form.

46. The method of claim 43 wherein configuring the first program's functions comprises:

obtaining validation criteria for the one or more form elements from the first author;

configuring the field validation function based upon the validation criteria obtained from the first author.

47. The method of claim 43 wherein the functions to be performed by the first program include a derived quantity generation function that includes generating one or more quantities based upon a user's submitted values with respect to one or more form elements contained in the first form.

48. The method of claim 47 wherein configuring the first program's functions comprises:

obtaining the configuration information from the first author with respect to the derived quantity generation function; and

configuring the derived quantity generation function based upon the configuration information obtained from the first author.

49. The method of claim 43 wherein the functions to be performed by the first program include a license generation function that includes generating one or more licenses in response to the first form's submission.

50. The method of claim 49 wherein configuring the first program's functions comprises:

obtaining the license configuration information from the first author; and
configuring the license generation function based upon the license configuration information obtained from the first author.

51. The method of claim 43 wherein the functions to be performed by the first program include a cookie generation function that includes generating one or more cookies for each user who submits a submission of the first form for processing.

52. The method of claim 51 wherein configuring the first program's functions comprises:

obtaining the cookie configuration information from the first author with respect to the cookie generation function; and
configuring the cookie generation function based upon the cookie configuration information obtained from the first author.

53. The method of claim 43 wherein the functions to be performed by the first program include a form emailing function that includes emailing the contents of the first

form's submission to one or more addresses specified by the first author in response to the submission of the first form by a user.

54. The method of claim 53 wherein configuring the first program's functions comprises:

obtaining the email configuration information from the first author with respect to the form emailing function; and

configuring the form emailing based upon the email configuration information obtained from the first author.

55. The method of claim 43 wherein the functions to be performed by the first program include an email-to-the-user function that includes sending an email message to a user who submits the first form.

56. The method of claim 55 wherein configuring the first program's functions comprises:

obtaining the configuration information from the first author with respect to the email-to-the-user function; and

configuring the email-to-the-user function based upon the configuration information obtained from the first author.

57. The method of claim 43 wherein the functions to be performed by the first program include a form response function that includes generating one or more web pages in a user's browser, upon receipt of the first form's submission from the user.

58. The method of claim 57 wherein configuring the first program's functions comprises:

obtaining the form response configuration information from the first author with respect to the form response function; and

configuring the form response generation function based upon the configuration information obtained from the first author.

59. The method of claim 43 wherein the functions to be performed by the first program include a form threading function that includes preserving a state of one or more fields in the first form and passing the state of the one or more fields in the first form to a second form.

60. The method of claim 59 wherein configuring the first program's functions comprises:

obtaining the configuration information from the first author with respect to the form threading function; and

configuring the form threading function based upon the configuration information obtained from the first author.

61. The method of claim 60 wherein the functions to be performed by the first program include a form logging function that includes logging a user's submitted values for one or more form elements included in the first form.

62. The method of claim 61 wherein the submitted values are stored in a database.

63. The method of claim 62 wherein the values in each submission are stored in a single row of a table, different submissions corresponding to different rows of the table.

64. The method of claim 61 wherein configuring the first program's functions comprises:

obtaining the configuration information from the first author with respect to the form logging function; and

configuring the form logging function based upon the configuration information obtained from the first author.

65. The method of claim 64 further comprising:

providing the first author with a capability to manage data relating to the submissions of the first form by one or more users.

66. The method of claim 65 wherein providing comprises:

logging data with respect to the first form's submissions by the one or more users;
and

allowing the first author to access and use the logged data.

67. The method of claim 65 further comprising:

providing the first author with a capability to perform a cumulative analysis function with respect to the data received from submissions of the first form.

68. The method of claim 67 wherein providing comprises:

allowing the first author to construct a set of queries to extract one or more types of information with respect to the submissions of the first form.

69. The method of claim 68 wherein the first author is allowed to perform the cumulative analysis function on a regular basis.

70. The method of claim 68 wherein the first author is allowed to perform the cumulative analysis function on demand.

71. The method of claim 65 wherein the first author is allowed to track and manage each user's submission of the first form.

72. The method of claim 69 wherein the first author is allowed to select a particular submission of the first form from a list of submissions of the first form and to modify the submitted value of one or more form elements in the first form.

73. The method of claim 72 wherein the first author is allowed to add extra data fields associated with each submission, the values for these fields being provided separately by the first author and separate from the submission.

74. The method of claim 43 further comprising:
allowing the first author to configure an email function to be performed by the first program in response to a submission of the first form by a user.

75. The method of claim 74 wherein allowing the first author comprises:
allowing the first author to specify when an email message is to be sent;
allowing the first author to specify to one or more target addresses to which the email message is to be sent; and
allowing the first author to specify the content of the email message.

76. A machine-readable medium comprising instructions which, when executed by a machine, cause the machine to perform operations comprising:
receiving a form from a user;
parsing said form to extract specification of form elements contained in said form;
and
allowing said user to configure a set of actions to be performed in processing a submission of said form, comprising:

presenting said user with a user interface to allow said user to input specification of said set of actions to be performed in processing said submission of said form;

obtaining specification for said set of actions from said user; and

generating a configuration structure corresponding to said specification for said set of actions to be performed.

77. The machine-readable medium of claim 76 further comprising:

generating a program whose functionality corresponds to said specification of said set of actions, said program to process submissions of said form.

78. The machine-readable medium of claim 76 further comprising:

generating a set of directives corresponding to said specification of said set of actions, said set of directives is to be used by program that is designated as the program to process a plurality of forms.

79. The machine-readable medium of claim 76 wherein said user interface is generated based upon specification of said form obtained from parsing said form.

80. The machine-readable medium of claim 76 further comprising:

maintaining consistency between said configuration structure and said form.

81. A machine-readable medium comprising instructions which, when executed by a machine, cause the machine to perform operations comprising:

receiving a first form created by a first author, the first form including one or more input fields, each input field having one or more field attributes;

parsing the first form to extract specification information with respect to the one or more input fields including the one or more field attributes associated with each input field; and

presenting to the first author a user interface including a set of questions with respect to the one or more input fields, the user interface allowing the first author to specify one or more specific actions that are to be performed in processing submissions of the first form.

82. The machine-readable medium of claim 81 wherein the set of questions is constructed based upon the extracted specification information.

83. The machine-readable medium of claim 81 further comprising:

performing the one or more specific actions specified by the first author in processing submissions of the first form.

84. The machine-readable medium of claim 81 further comprising:

generating a first program including one or more program components to perform the one or more actions specified by the first author in processing a submission of the

first form submitted by a first user, the first program being designated as the program to process submissions of the first form.

85. The machine-readable medium of claim 81 further comprising:
generating a set of directives corresponding to the one or more actions specified by the first author, the set of directives is to be used by a first program that is designated as the program to process a plurality of forms including the first form.

86. The machine-readable medium of claim 81 wherein a configuration data structure is created for the first form to include configuration information provided by the first author with respect to the set of actions to be performed in processing submissions of the first form.

87. The machine-readable medium of claim 86 further comprising:
maintaining consistency between the configuration data structure and the first specification of the first form.

88. The machine-readable medium of claim 87 wherein maintaining comprises:
modifying the configuration information in the configuration data structure in response to changes in the specification of the first form.

89. A machine-readable medium comprising instructions which, when executed by a machine, cause the machine to perform operations comprising:

allowing a first author of a first form who is located at a first location to remotely configure a first program's functions at a second location, the first program to perform its corresponding functions in processing submissions of the first form, said allowing comprising:

receiving the first form at a first server;
parsing the first form to extract specification information of form elements included in the first form;
creating a representation of the form elements based upon specification information extracted from the first form;
obtaining configuration information from the first author; and
configuring the first program's functions using the configuration information provided by the first author.

90. The machine-readable medium of claim 89 wherein the functions to be performed by the first program comprise a field validation function that includes validating one or more form elements included in the first form.

91. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a derived quantity generation function that includes generating one or more quantities based upon a user's submitted values with respect to one or more form elements contained in the first form.

92. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a license generation function that includes generating one or more licenses in response to the first form's submission.

93. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a cookie generation function that includes generating one or more cookies for each user who submits the first form for processing.

94. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a form emailing function that includes emailing the contents of the first form's submission to one or more addresses specified by the first author in response to the submission of the first form by a user.

95. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include an email-to-the-user function that includes sending an email message to a user who submits the first form.

96. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a form response function that includes generating one or more responses upon receipt of the first form's submission from a user.

97. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a form threading function that includes preserving a state of

one or more fields in the first form and passing the state of the one or more fields in the first form to a second form.

98. The machine-readable medium of claim 89 wherein the functions to be performed by the first program include a form logging function that includes logging a user's submitted values for one or more form elements included in the first form.

99. The method of claim 98 wherein the submitted values are stored in a database.

100. The method of claim 99 wherein the values in each submission are stored in a single row of a table, different submissions corresponding to different rows of the table.

101. The machine-readable medium of claim 89 further comprising:
providing the first author with a capability to manage data relating to the submissions of the first form by one or more users.

ADD
C-1

009260-16569960